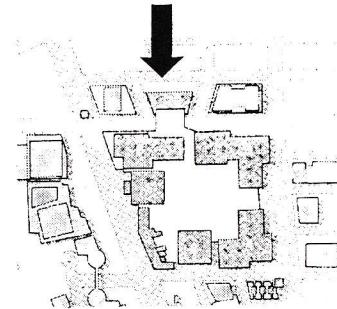
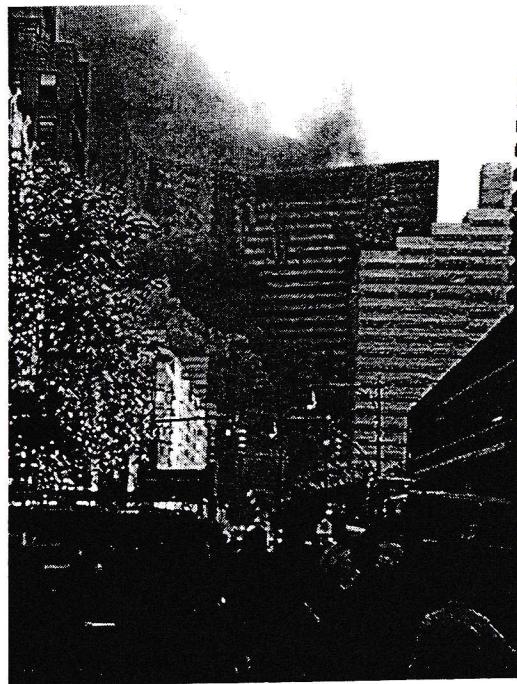
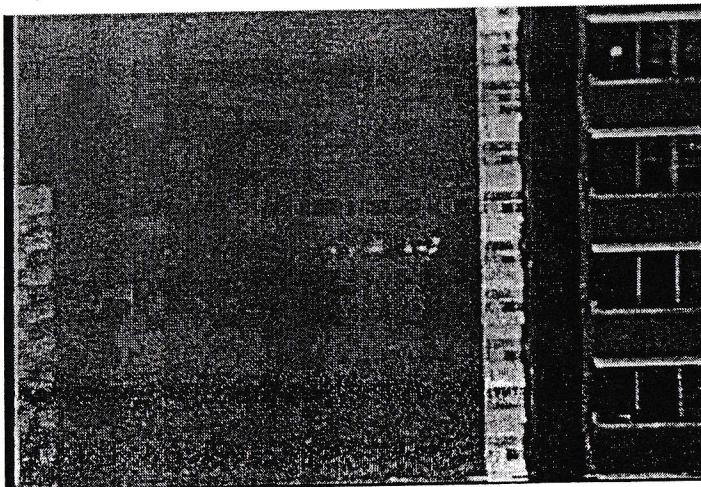
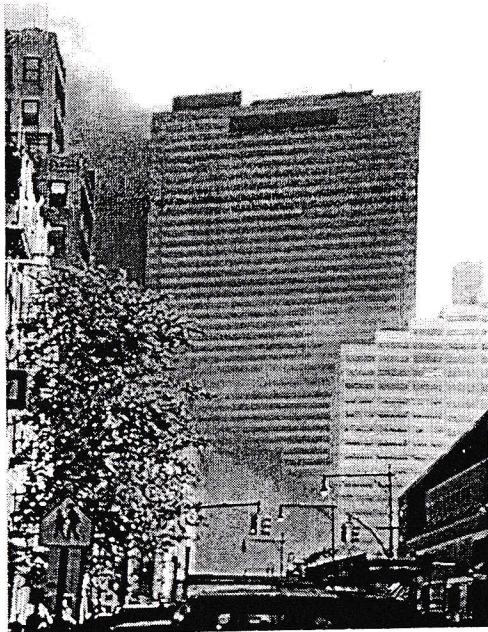
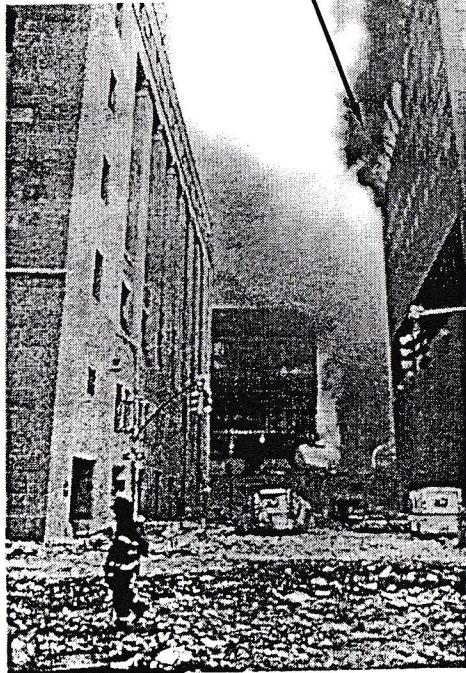




WTC-7

Fire on Southeast corner



Primary focus of WTC BPAT Study

Secondary focus of WTC BPAT Study

Primary NIST projects for implementing BPAT recommendation

X

Supporting projects for implementing BPAT recommendation

RDD&D

8.2.1 Detailed modeling of aircraft impacts

8.2.2 Detailed modeling of fires coupled with structural modeling

8.2.3 Detailed modeling of floor systems and connections

8.2.4 Study of performance of sprayed-on fire protection on floor trusses

8.2.5 Study of performance of fire proofing of beam, columns, and diaphragms

8.2.6 Testing of resistance of sprayed-on fireproofing to mechanical damage

8.2.7 Study to determine feasible designs to arrest collapse

8.3.1 Study WTC 3 to determine design features that resisted collapse

8.4.1 Relate fire ratings (e.g., ASTM E119) to real fire performance of connections (WTC 4, 5, 6)

3.5.1 Collect data on initial damage to WTC 7 from collapse of WTC 1

3.5.2 Determine fuel loads, location of emergency power systems, and controls for WTC 7

3.5.3 Detailed modeling of fire coupled to behavior of load transfer system in WTC 7

3.5.4 Review seat connections to verify capacity of 3rd floor to transfer load

3.5.5 Confirm suggested mechanism for progressive collapse of WTC 7

3.5.6 Study adequacy of current fire resistance design provisions for pivotal structural members

3.5.7 Fire resistance of members and connections

3.6 Bankers trust building – how collapse was halted

3.7 Peripheral buildings – relevance to future events

3.8 Metallurgical analysis of steel samples

3.9 Study process – resources and data access

3.10 Interaction of structural elements and fire

3.11 Fire protection engineering discipline

3.12 Building evacuation

3.13 Interaction of structural and fire professions

3.14 Emergency personnel

3.15 Education of stakeholders²

3.16 National response

3.17 Archival information²

Building	WTC Investigation								
	A. Aircraft Impact Damage	B. Forensic Analysis of Steel	C. Analysis of Built-In Fire Protection Systems	D. Prediction of Thermal Environment	E. Structural Fire Response & Vulnerability	F. Structural Collapse Vulnerability & Mechanisms	G. Occupant Behavior & Egress	H. Fire Service Technologies & Guidelines	I. Fire Codes & Standards
WTC 1&2	• X								X
	X •		X		•				
		X			•	•			
			X •		•				X
			X	•	•				X
			X		•				X
						X			
WTC 3									
WTC 4,5,6								X	X
WTC 7		X	•		X				
			•		X				
			•		•				
					•	•			
		X		X	•				X
			X	X	X			X	X
other									
N/A	X	•		X	X				
				X					
						•			
							•		
				•					

		WTC Investigation										NIST PUBLIC-PRIVATE RESPONSE PLAN	
		2. Crosscutting many investigation and RDD&D projects					3. Education of stakeholders is primary objective of DTAP					RDD&D	DTAP
•	X	X	X	X	X	X	X	X	X	X	X	C. Analysis of Built-In Fire Protection Systems	
•			X	X	X	X	X	X	X	X	X	D. Prediction of Thermal Environment	
•			X	X	X	X	X	X	X	X	X	E. Structural Fire Response & Vulnerability	
•			X	X	X	X	X	X	X	X	X	F. Structural Collapse Vulnerability & Mechanisms	
•			X	X	X	X	X	X	X	X	X	G. Occupant Behavior & Egress	
•			X	X	X	X	X	X	X	X	X	H. Fire Service Technologies & Guidelines	
•			X	X	X	X	X	X	X	X	X	I. Fire Codes & Standards	
•			X	X	X	X	X	X	X	X	X	J. Analysis of Building Codes & Practices	
•	X	• •	X	• X			•	X	X	X	X	1. Method of Fire Resistance Determination	
•	• •	• •		• X	X	•	•				X	2. Fire Safe Design & Retrofit of Structures	
•	• •	• •	• •	X	•	X	X	•	•			3. Prevention of Progressive Structural Collapse	
•	•		X				X		X	X	X	4. Fire Protective Coatings for Steel	
•		X									X	5. Occupant Behavior & Egress	
•		•										6. Simulation Tools for Fire & Smoke Movement	
•												7. Technologies for Emergency Mobility	
•												8. Equipment Standards for First Responders	
•												9. Standard Building Information Models	
•												10. Guidelines & Tech. for Reducing Vulnerability to CBR Attacks	
•												11. Cost-Effective Risk Management Tools	
•	• •	• •	X X	• • X			X	X				National Construction & Infrastructure Roadmap & Deployment Support	
•												FEMA/NIST MOU	